



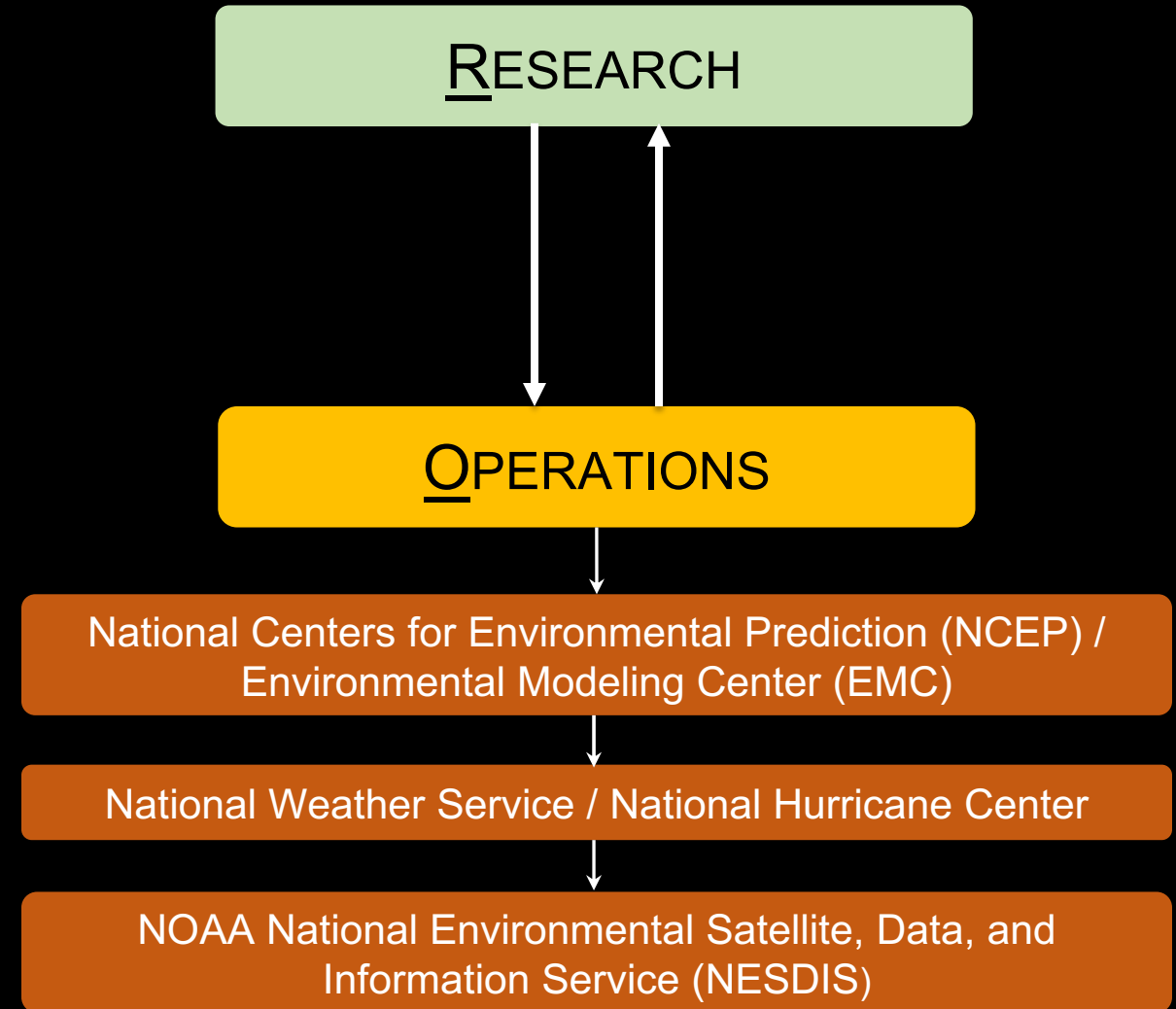
# Tropical Cyclone Observations from NOAA's Hurricane Field Program

Shirley Murillo  
Deputy Director, Hurricane Research Division –  
Atlantic Oceanographic & Meteorological Laboratory



# NOAA's Hurricane Field Program

*Supporting observational data collection for research and operations*



# Advancing the Prediction of Hurricanes EXperiment (APHEX)

**1. Collect observations**

**2. Develop & refine measurement strategies**

**3. Improve the understanding of TCs**





# Hurricane Hunter Aircraft



**NOAA G-IV**



**NOAA WP-3D**

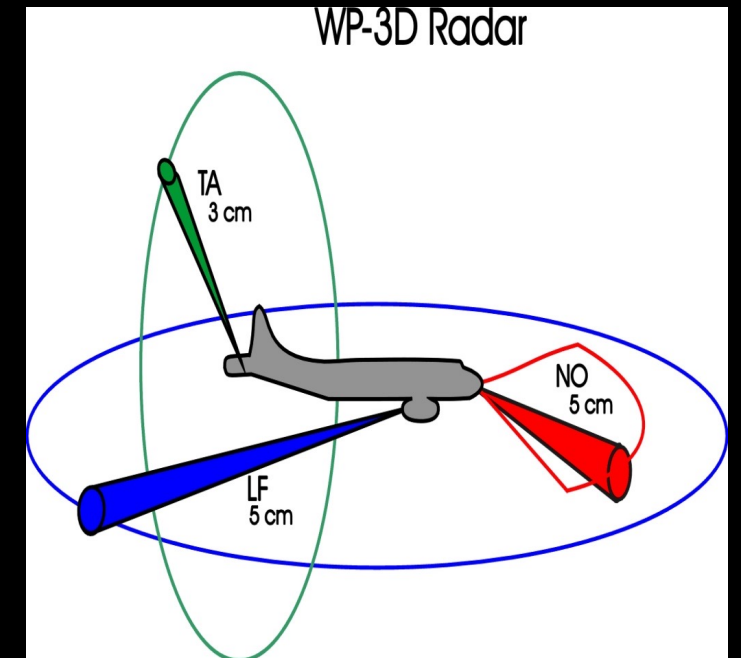
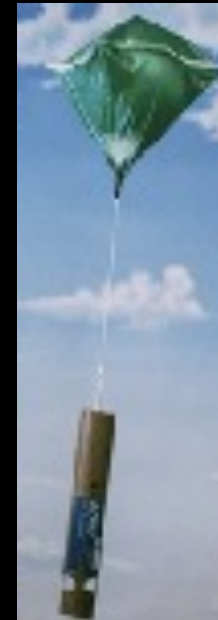
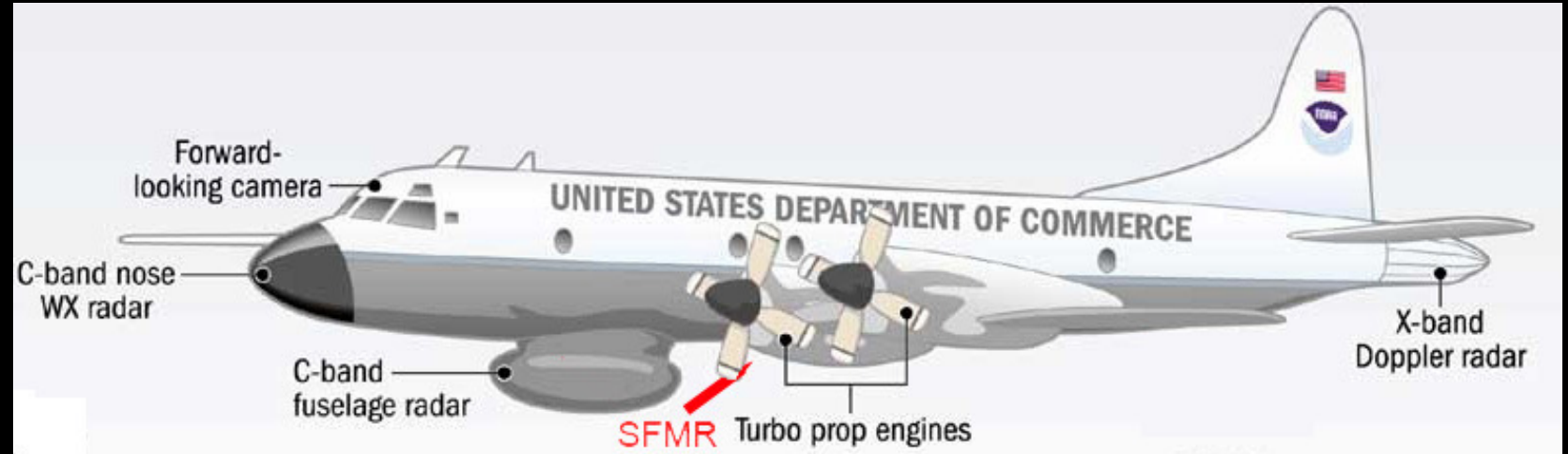


- **In-situ**  
Wind, press., temp.

- **Expendables**  
Dropsondes  
AXBT, AXCP, buoy

- **Remote Sensors**  
Tail Doppler Radar (TDR)  
SFMR  
Doppler Wind Lidar (DWL)  
Scanning Radar Altimeter  
Scatterometer/ profiler

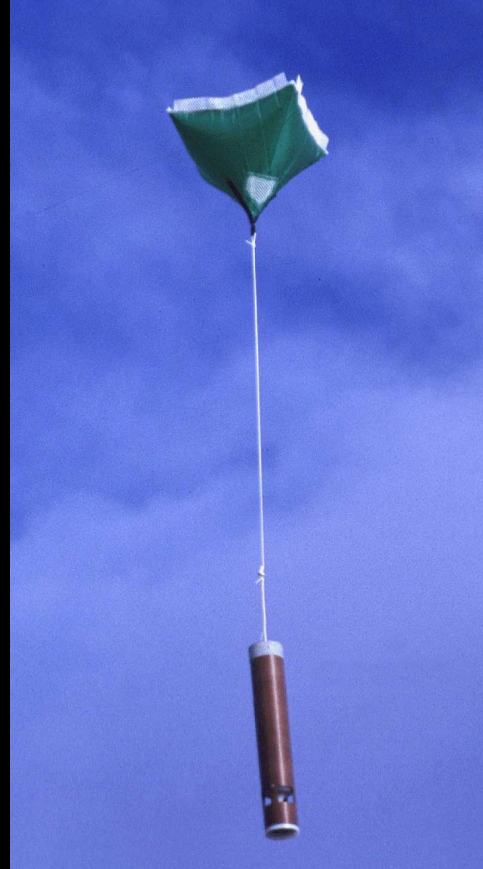
- **Platforms**  
Unmanned Aerial Systems (UAS)



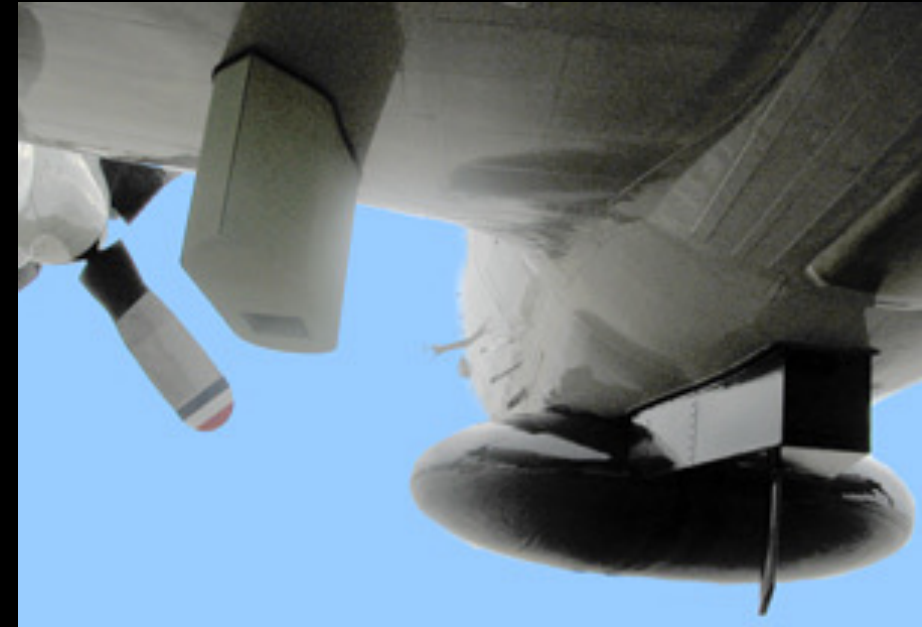
# Three aircraft instruments



Tail Doppler Radar

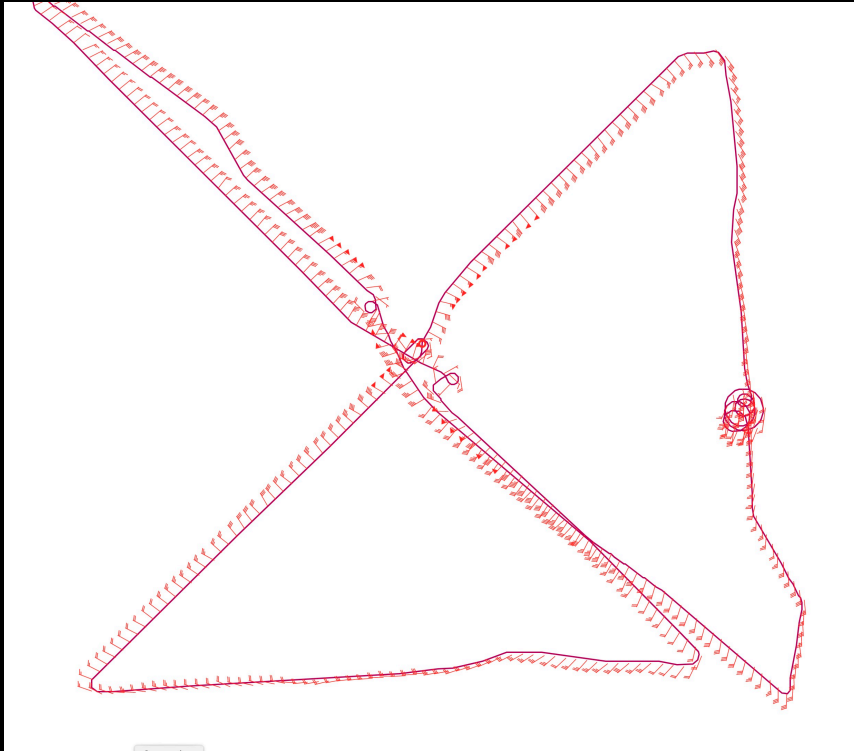


GPS Dropsonde

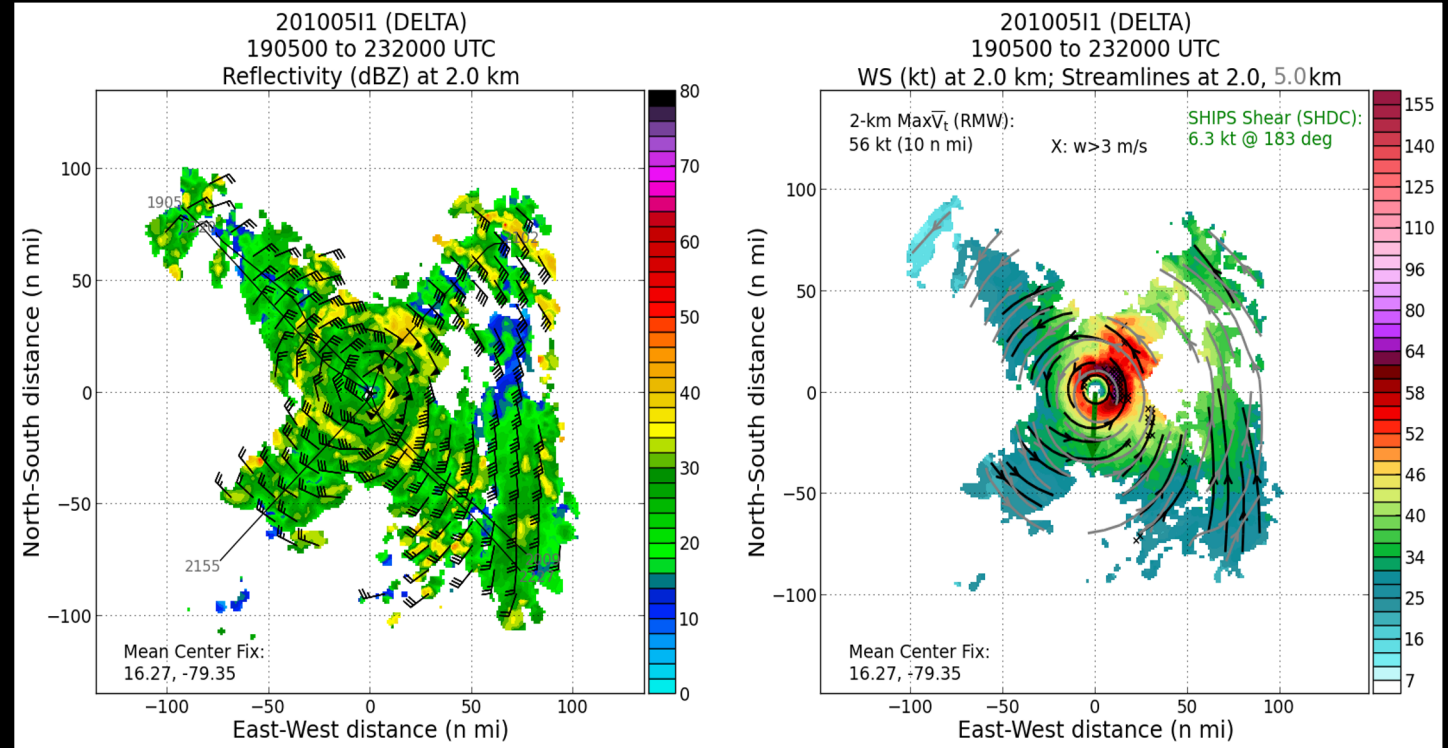


Stepped Frequency Microwave Radiometer

# Hurricane Delta 2020



In-situ data: flight level winds

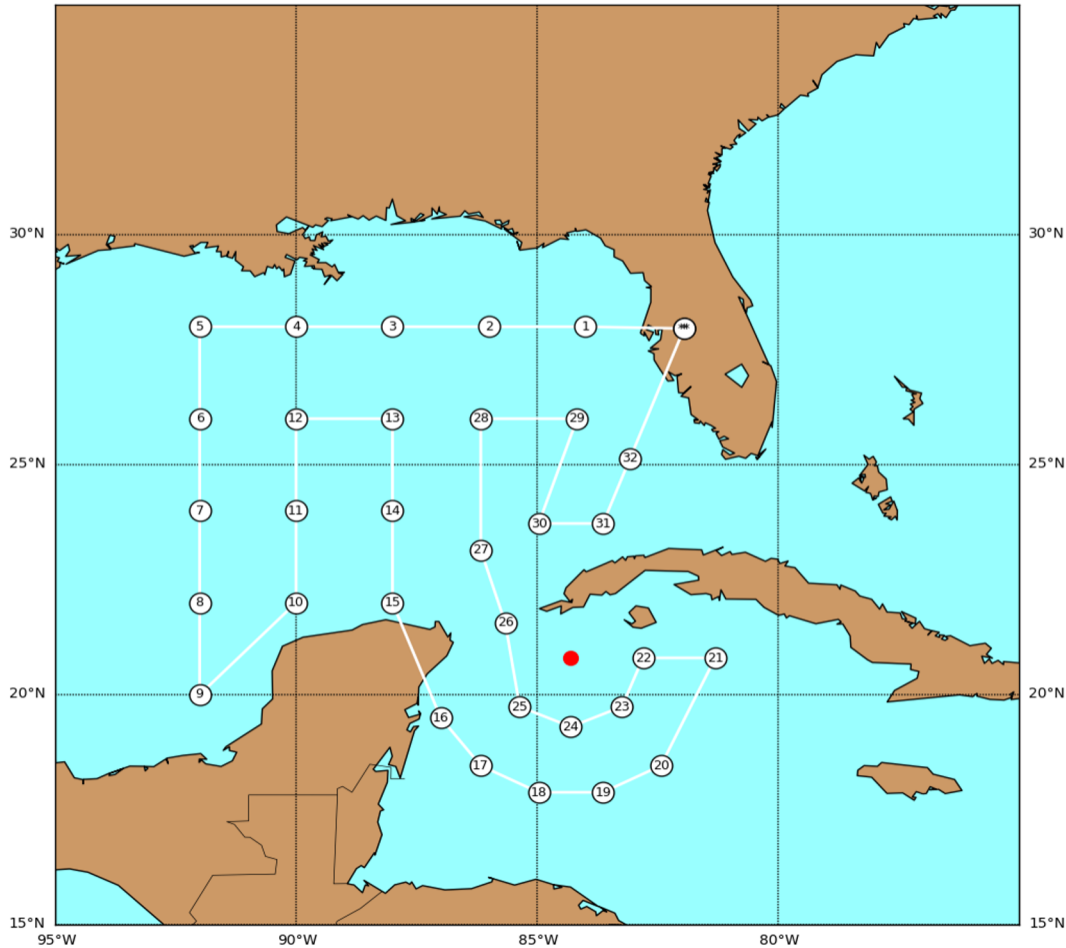


Tail Doppler Radar Analysis



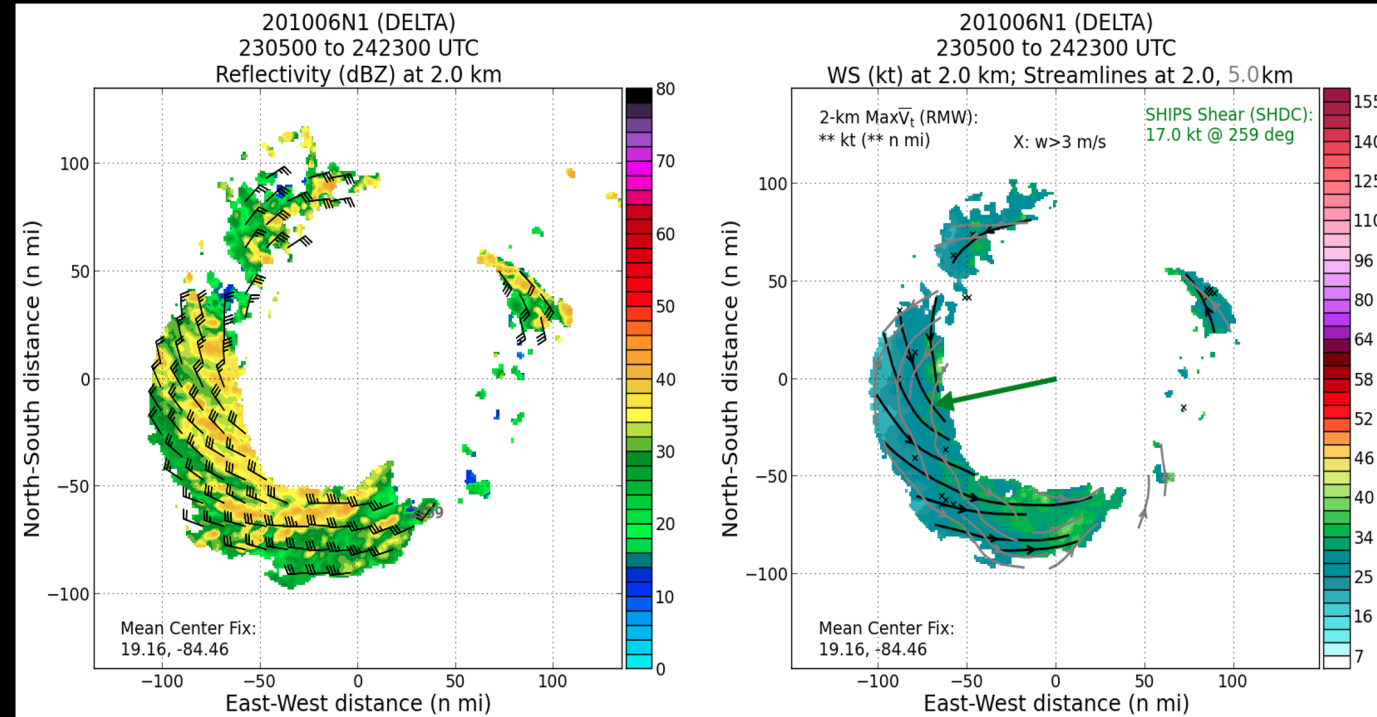
# Hurricane Delta 2020

NOAA G-IV Flight Track Drop Locations for DELTA (AL262020)  
On 2020100700 the storm was centered at 20.8 N; -84.30 W



Flight Track with Drop locations

## Tail Doppler Radar Analysis



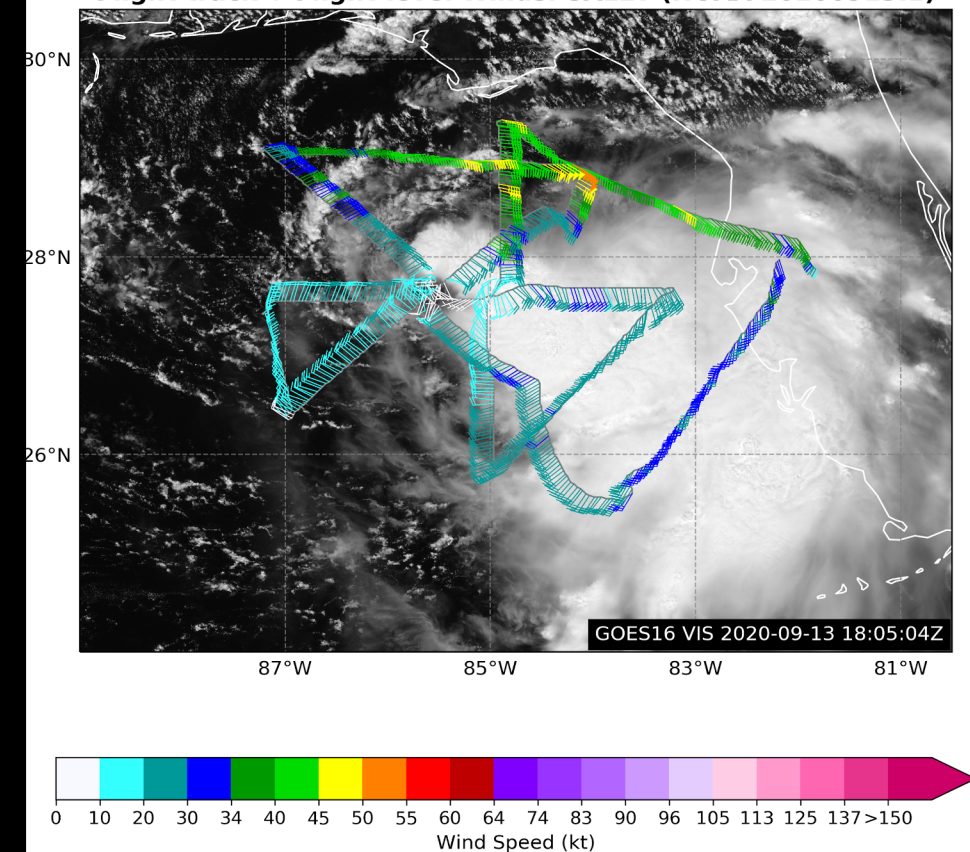






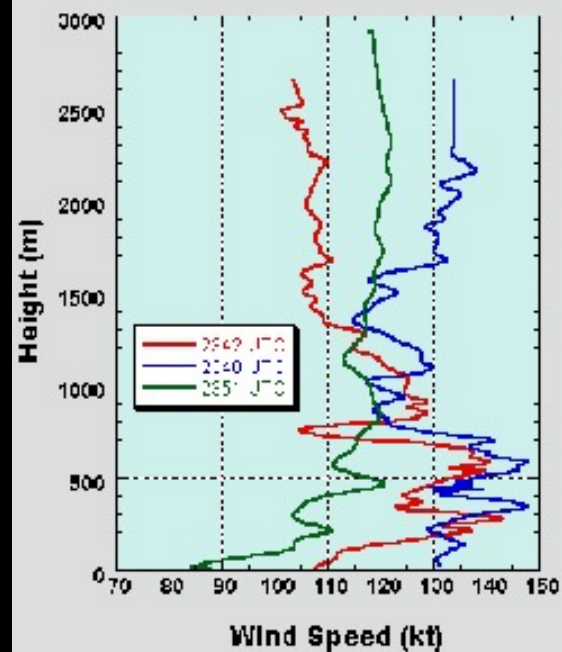
# Hurricane Observations

Flight track + Flight-level Winds: SALLY (NOAA 20200913I1)

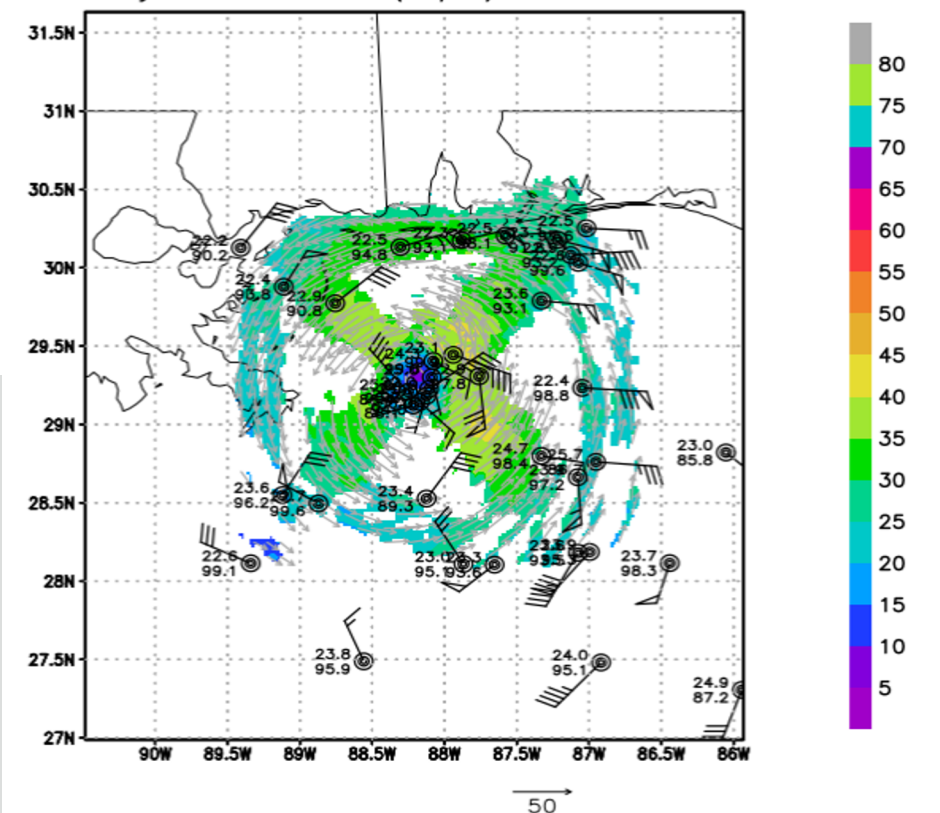


Flight level winds in color

Eyewall Wind Speed Profiles  
Hurricane Guillermo - 3 August 1997



200915I1 Sally at 0.5 km (m/s) Valid 20200915 1742Z

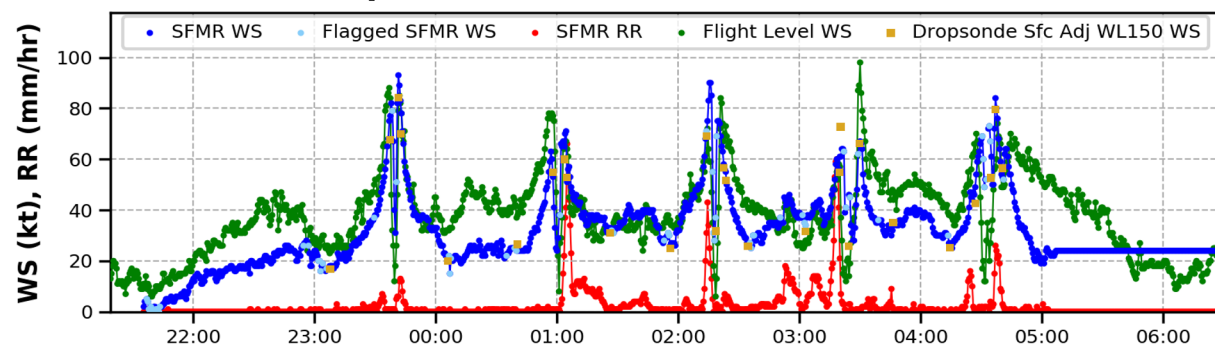


Dropsonde data w/ radar analysis

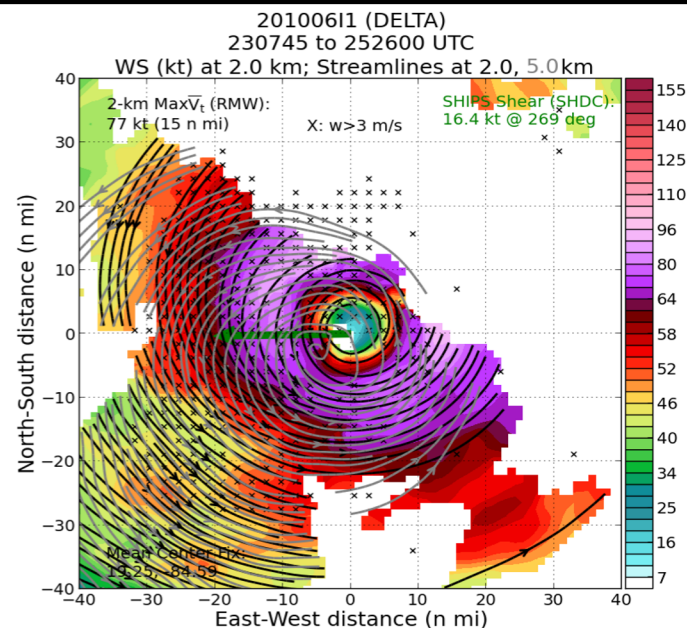
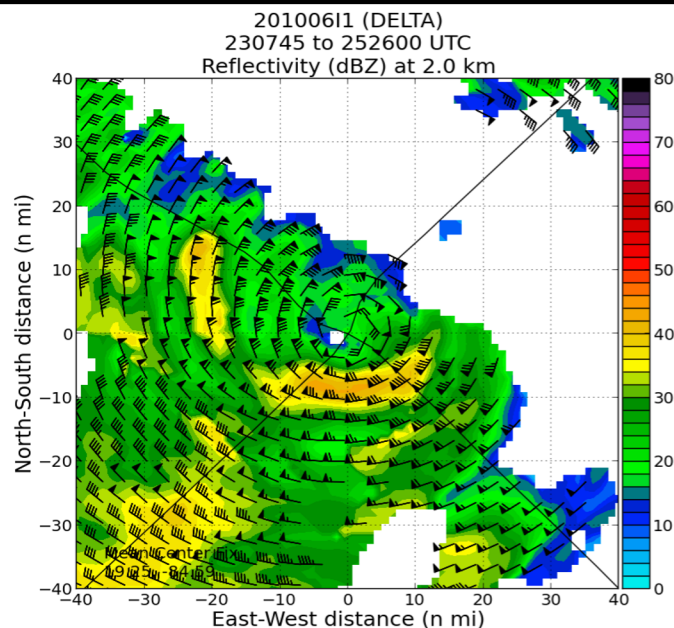


# Hurricane Delta 2020

Wind Speed and Rain Rate (NOAA 20201006I1)



SFMR surface winds



Tail Doppler Radar Analysis



# Tropical Cyclone Observations from NOAA's Hurricane Field Program

